Amendments to the Claims

This listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims:

1. – 85. (Canceled)

86. (Currently amended) A cultured sulfatase-producing cell wherein the ratio of active sulfatase to total sulfatase produced by the cell is increased, wherein the cell comprises ~~expresses~~:

(i) ~~a sulfatase, wherein the sulfatase is~~ (a) an endogenous ~~sulfatase~~ nucleic acid operably linked to~~, wherein the gene encoding the endogenous sulfatase comprises~~ a heterologous promoter ~~upstream of an endogenous sulfatase gene genomic locus~~, wherein the endogenous nucleic acid encodes a sulfatase, or (b) a[[n]] ~~exogenous sulfatase encoded by~~ heterologous nucleic acid, wherein the heterologous nucleic acid encodes a sulfatase ~~DNA introduced into the cell~~; and

(ii) ~~a Formylglycine Generating Enzyme, wherein the Formylglycine Generating Enzyme is~~ (a) an endogenous ~~Formylglycine Generating Enzyme~~ nucleic acid operably linked to ~~comprising amino acids 34-374 of SEQ ID NO:2 or SEQ ID NO:2, wherein the gene encoding the endogenous Formylglycine Generating Enzyme comprises~~ a heterologous promoter ~~upstream of an endogenous Formylglycine Generating Enzyme gene genomic locus~~, wherein the endogenous nucleic acid encodes a Formylglycine Generating Enzyme comprising amino acids 34-374 of SEQ ID NO:2 or SEQ ID NO:2, or (b) a heterologous nucleic acid, wherein the heterologous nucleic acid encodes a[[n]] ~~exogenous~~ Formylglycine Generating Enzyme comprising amino acids 34-374 of SEQ ID NO:2 or SEQ ID NO:2 ~~that is encoded by heterologous DNA introduced into the cell~~,

wherein the ratio of active sulfatase to total sulfatase produced by the cell is increased by at least 5% as compared to the ratio in the same cell type without the Formylglycine Generating Enzyme of (ii).

87. (Currently amended) The cultured sulfatase-producing cell of claim 86, wherein the ratio of active sulfatase to total sulfatase produced by the cell is increased by at least 10% as compared to the ratio in the same cell type without the Formylglycine Generating Enzyme of (ii).

88. (Currently amended) The cultured sulfatase-producing cell of claim 86, wherein the ratio of active sulfatase to total sulfatase produced by the cell is increased by at least 20% as compared to the ratio in the same cell type without the Formylglycine Generating Enzyme of (ii).

89. (Currently amended) The cultured sulfatase-producing cell of claim 86, wherein the ratio of active sulfatase to total sulfatase produced by the cell is increased by at least 50% as compared to the ratio in the same cell type without the Formylglycine Generating Enzyme of (ii).

90. (Currently amended) The cultured sulfatase-producing cell of claim 86, wherein the ratio of active sulfatase to total sulfatase produced by the cell is increased by at least 100% as compared to the ratio in the same cell type without the Formylglycine Generating Enzyme of (ii).

91. (Withdrawn – currently amended) A sulfatase produced by a cultured sulfatase-producing cell of any one of claims 86-90.

92. (Currently amended) The cultured sulfatase-producing cell of claim 86, wherein the cell is a prokaryotic cell, and wherein the cell comprises a heterologous nucleic acid that encodes a Formylglycine Generating Enzyme comprising amino acids 34-374 of SEQ ID NO:2 or SEQ ID NO:2 ~~is an exogenous Formylglycine Generating Enzyme~~.

93. (Currently amended) The cultured sulfatase-producing cell of claim 86, wherein the cell is a eukaryotic cell, and wherein the cell comprises a heterologous nucleic acid that encodes

a Formylglycine Generating Enzyme comprising amino acids 34-374 of SEQ ID NO:2 or SEQ ID NO:2 ~~is an exogenous Formylglycine Generating Enzyme~~.

94. (Currently amended) The cultured sulfatase-producing cell of claim 93, wherein the eukaryotic cell is a mammalian cell~~, and wherein the Formylglycine Generating Enzyme is an exogenous Formylglycine Generating Enzyme~~.

95. (Currently amended) The cultured sulfatase-producing cell of claim 86, wherein the cell is a human cell.

96. (Currently amended) The cultured sulfatase-producing cell of claim 86, wherein the sulfatase is selected from the group consisting of Iduronate 2-Sulfatase, Sulfamidase, N-Acetylgalactosamine 6-Sulfatase, N-Acetylglucosamine 6-Sulfatase, Arylsulfatase A, Arylsulfatase B, Arylsulfatase C, Arylsulfatase D, Arylsulfatase E, Arylsulfatase F, Arylsulfatase G, HSulf-1, HSulf-2, HSulf-3, HSulf-4, HSulf-5, and HSulf-6.

97. – 100. (Canceled)

101. (Currently amended) A cultured sulfatase-producing cell wherein the ratio of active sulfatase to total sulfatase produced by the cell is increased, wherein the cell comprises ~~expresses~~:

(i) ~~a sulfatase, wherein the sulfatase is~~ (a) an endogenous ~~sulfatase~~ nucleic acid operably linked to~~, wherein the gene encoding the endogenous sulfatase comprises~~ a heterologous promoter ~~upstream of an endogenous sulfatase gene genomic locus~~, wherein the endogenous nucleic acid encodes a sulfatase, or (b) a[[n]] ~~exogenous sulfatase encoded by~~ heterologous nucleic acid, wherein the heterologous nucleic acid encodes a sulfatase ~~DNA introduced into the cell~~; and

(ii) ~~a Formylglycine Generating Enzyme, wherein the Formylglycine Generating Enzyme is~~ (a) an endogenous ~~Formylglycine Generating Enzyme~~ nucleic acid operably linked to~~, wherein the gene encoding the endogenous Formylglycine Generating Enzyme comprises~~ a heterologous

promoter ~~upstream of an endogenous Formylglycine Generating Enzyme gene genomic locus~~, wherein the endogenous nucleic acid encodes a Formylglycine Generating Enzyme, or (b) a heterologous nucleic acid, wherein the heterologous nucleic acid encodes a[[n]] ~~exogenous~~ Formylglycine Generating Enzyme ~~encoded by heterologous DNA introduced into the cell~~, the Formylglycine Generating Enzyme of (a) or (b) having:

an amino acid sequence that comprises an amino acid sequence that has at least 95% identity to the amino acid sequence of amino acids 34-374 of SEQ ID NO:2 or SEQ ID NO:2;

wherein the Formylglycine Generating Enzyme is capable of forming L-C_α-formylglycine on a sulfatase; and

wherein the ratio of active sulfatase to total sulfatase produced by the cell is increased by at least 5% as compared to the ratio in the same cell type without the Formylglycine Generating Enzyme of (ii).

102. (Currently amended) The cultured sulfatase-producing cell of claim 101, wherein the ratio of active sulfatase to total sulfatase produced by the cell is increased by at least 10% as compared to the ratio in the same cell type without the Formylglycine Generating Enzyme of (ii).

103. (Currently amended) The cultured sulfatase-producing cell of claim 101, wherein the ratio of active sulfatase to total sulfatase produced by the cell is increased by at least 20% as compared to the ratio in the same cell type without the Formylglycine Generating Enzyme of (ii).

104. (Currently amended) The cultured sulfatase-producing cell of claim 101, wherein the ratio of active sulfatase to total sulfatase produced by the cell is increased by at least 50% as compared to the ratio in the same cell type without the Formylglycine Generating Enzyme of (ii).

105. (Currently amended) The cultured sulfatase-producing cell of claim 101, wherein the ratio of active sulfatase to total sulfatase produced by the cell is increased by at least 100% as compared to the ratio in the same cell type without the Formylglycine Generating Enzyme of (ii).

106. (Withdrawn – currently amended) A sulfatase produced by a cultured sulfatase-producing cell of claim 101.

107. (Currently amended) The cultured sulfatase-producing cell of claim 101, wherein the cell is a prokaryotic cell, and wherein the cell comprises a heterologous nucleic acid that encodes a Formylglycine Generating Enzyme~~ is an exogenous Formylglycine Generating Enzyme~~.

108. (Currently amended) The cultured sulfatase-producing cell of claim 101, wherein the cell is a eukaryotic cell, and wherein the cell comprises a heterologous nucleic acid that encodes a Formylglycine Generating Enzyme~~ is an exogenous Formylglycine Generating Enzyme~~.

109. (Currently amended) The cultured sulfatase-producing cell of claim 108, wherein the eukaryotic cell is a mammalian cell~~, and wherein the Formylglycine Generating Enzyme is an exogenous Formylglycine Generating Enzyme~~.

110. (Currently amended) The cultured sulfatase-producing cell of claim 101, wherein the cell is a human cell.

111. (Currently amended) The cultured sulfatase-producing cell of claim 101, wherein the sulfatase is selected from the group consisting of Iduronate 2-Sulfatase, Sulfamidase, N-Acetylgalactosamine 6-Sulfatase, N-Acetylglucosamine 6-Sulfatase, Arylsulfatase A, Arylsulfatase B, Arylsulfatase C, Arylsulfatase D, Arylsulfatase E, Arylsulfatase F, Arylsulfatase G, HSulf-1, HSulf-2, HSulf-3, HSulf-4, HSulf-5, and HSulf-6.

112. (Withdrawn – currently amended) The cultured sulfatase-producing cell of claim 101, wherein the Formylglycine Generating Enzyme comprises a subdomain 3, wherein the subdomain 3 comprises a GFR motif.

113. – 115. (Cancel)

116. (Currently amended) The cultured sulfatase-producing cell of claim 86, wherein the cell comprises an endogenous nucleic acid operably linked to a heterologous promoter, wherein the endogenous nucleic acid encodes a Formylglycine Generating Enzyme comprising ~~is an endogenous Formylglycine Generating Enzyme that comprises~~ SEQ ID NO:2.

117. (Currently amended) The cultured sulfatase-producing cell of claim 86, wherein the cell comprises a heterologous nucleic acid that encodes a Formylglycine Generating Enzyme comprising ~~is an exogenous Formylglycine Generating Enzyme that comprises~~ SEQ ID NO:2.

118. (Currently amended) The cultured sulfatase-producing cell of claim 101, wherein the cell comprises an endogenous nucleic acid operably linked to a heterologous promoter, wherein the endogenous nucleic acid encodes a Formylglycine Generating Enzyme, ~~is an endogenous~~ wherein the Formylglycine Generating Enzyme ~~and~~ comprises an amino acid sequence that has at least 95% identity to the amino acid sequence of SEQ ID NO:2.

119. (Currently amended) The cultured sulfatase-producing cell of claim 101, wherein the cell comprises a heterologous nucleic acid that encodes a Formylglycine Generating Enzyme, ~~is an exogenous~~ wherein the Formylglycine Generating Enzyme ~~and~~ comprises an amino acid sequence that has at least 95% identity to the amino acid sequence of SEQ ID NO:2.

120. (Currently amended) The cultured sulfatase-producing cell of claim 86, wherein the cell comprises an endogenous nucleic acid operably linked to a heterologous promoter, wherein the endogenous nucleic acid encodes a Formylglycine Generating Enzyme ~~is an endogenous Formylglycine Generating Enzyme that comprises~~ comprising amino acids 34-374 of SEQ ID NO:2.

121. (Currently amended) The cultured sulfatase-producing cell of claim 86, wherein the cell comprises a heterologous nucleic acid that encodes a Formylglycine Generating Enzyme, ~~is~~

~~an exogenous~~ wherein the Formylglycine Generating Enzyme ~~that~~ comprises amino acids 34-374 of SEQ ID NO:2.

122. (Currently amended) The cultured sulfatase-producing cell of claim 101, wherein the cell comprises an endogenous nucleic acid operably linked to a heterologous promoter, wherein the endogenous nucleic acid encodes a Formylglycine Generating Enzyme ~~is an endogenous Formylglycine Generating Enzyme and comprises~~ comprising an amino acid sequence that has at least 95% identity to the amino acid sequence of amino acids 34-374 of SEQ ID NO:2.

123. (Currently amended) The cultured sulfatase-producing cell of claim 101, wherein the cell comprises a heterologous nucleic acid that encodes a Formylglycine Generating Enzyme, wherein the ~~is an exogenous~~ Formylglycine Generating Enzyme ~~and~~ comprises an amino acid sequence that has at least 95% identity to the amino acid sequence of amino acids 34-374 of SEQ ID NO:2.